

**AMENDMENTS TO THE CLAIMS**

Pursuant to 37 C.F.R. § 1.121 the following listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Previously Presented) A method of sensing the activity of neural tissue, the method comprising the steps of:

    placing an electrode in a blood vessel proximate to the neural tissue, said electrode being smaller than 10 μm in diameter; and

    monitoring a signal on the electrode by way of a wire connected to the electrode,

    wherein the signal is indicative of the electrical brain activity of the neural tissue.

2. (Original) The method of claim 1, wherein the electrode comprises a sensing end, the sensing end of the electrode being placed in the blood vessel proximate to the neural tissue.

3. (Original) The method of claim 1, wherein the electrode is inserted into the blood vessel at a point upstream of a junction with another blood vessel.

4. (Original) The method of claim 3, wherein a sensing end of the electrode is deployed to a point downstream of the junction.

5. (Previously Presented) The method of claim 1, comprising the steps of:

    placing a further electrode on the neural tissue proximate to the electrode;

    applying a stimulus to the neural tissue;

monitoring a further signal on the further electrode after applying the stimulus to the neural tissue; and  
comparing the signal to the further signal.

6. (Original) The method of claim 1, wherein the electrode comprises a nano-electrode.
7. (Original) The method of claim 1, wherein the electrode comprises an array of nano-electrodes.
8. (Original) The method of claim 7, wherein the nano-electrodes have different lengths.
9. (Original) The method of claim 6, wherein the nano-electrode comprises a cup-like end.

10 - 17. (Cancelled)

18. (Previously Presented) A method of stimulating neural tissue, the method comprising the steps of:

placing an electrode in a blood vessel proximate to the neural tissue, said electrode being smaller than 10  $\mu$ m in diameter; and

providing a signal on the electrode by way of a wire connected to the electrode,  
wherein the signal stimulates the electrical brain activity of the neural tissue.

19. (Previously Presented) The method of claim 18, wherein the electrode comprises an end, the end of the electrode being placed in the blood vessel proximate to the neural tissue.
20. (Previously Presented) The method of claim 18, wherein the electrode is inserted into the blood vessel at a point upstream of a junction with another blood vessel.
21. (Previously Presented) The method of claim 20, wherein an end of the electrode is deployed to a point downstream of the junction.
22. (Previously Presented) The method of claim 18, wherein the electrode comprises a nano-electrode.
23. (Previously Presented) The method of claim 18, wherein the electrode comprises an array of nano-electrodes.
24. (Previously Presented) The method of claim 23, wherein the nano-electrodes have different lengths.
25. (Previously Presented) The method of claim 22, wherein the nano-electrode comprises a cup-like end.
26. (Previously Presented) The method of claim 1 further comprising the step of stimulating neural tissue by providing a stimulation signal to said electrode.

27. (Previously Presented) The method of claim 1 further comprising the steps of:  
placing a second electrode in a second blood vessel proximate to the neural tissue, said  
second electrode being of sufficiently small size such that it is capable of being inserted into a  
capillary; and  
providing a stimulation signal to said second electrode.

28 - 29. (Cancelled)

30. (Previously Presented) The method of claim 18 further comprising the step of monitoring a  
monitor signal on said electrode.

31. (Previously Presented) The method of claim 18 further comprising the steps of:  
placing a second electrode in a second blood vessel proximate to the neural tissue, said  
second electrode being of sufficiently small size such that it is capable of being inserted into a  
capillary; and  
providing a monitor signal to said second electrode.

32. (Previously Presented) The method of claim 1 further comprising the step of filtering the  
signal from said electrode.

33. (Previously Presented) The method of claim 1 further comprising the step of utilizing a  
differential signal as said electrode signal.

34. (Previously Presented) The method of claim 1 further comprising the step of classifying brain states based on one of neuronal unit activity and field potential analysis.

35. (Previously Presented) The method of claim 1 further comprising the step of correlating electrical activity of neurons with brain states.

36. (Previously Presented) The method of claim 35 further comprising the step of performing pattern classification to determine brain states.

37 – 38. (Cancelled)

39. (Previously Presented) A method of sensing the activity of neural tissue, the method comprising the steps of:

inserting an electrode in a blood vessel at a point upstream of a junction with another blood vessel to position the electrode proximate to the neural tissue, said electrode being smaller than 10  $\mu\text{m}$  in diameter; and

monitoring a signal on the electrode by way of a wire connected to the electrode, wherein the signal is indicative of the electrical brain activity of the neural tissue.

40. (Cancelled)